

REMARKS

Claims 61-82 are pending. Claims 17-59 have been cancelled herein without prejudice or disclaimer. Claims 61, 64, 66-67 are amended herein. Claims 75 to 82 are added herein. Support for the amendments is set forth below. Support for the new claims is found at page 74 and Figs. 1-7 of the specification.

Applicants' Response to the Rejections under 35 U.S.C. §103(a)

Claims 61 and 64 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,665,968 to Meisburger et al. in view of U.S. Patent No. 4,137,476 to Ishii et al., U.S. Patent 6, 765,217 to Nishimura et al., U.S. Patent No. 4,8003,358 to Kato et al., U.S. Patent No. 6,315,512 to Tabrizi et al. and U.S. Patent No. 5,536,128 to Shimoyashiro et al. Claims 66 and 67 have also been rejected under 35 U.S.C. §103(a) as being unpatentable over the above references and further in view of U.S. Patent No. 5,944,049 to Beyer et al.

In response thereto, applicant has amended claims 61, 64 and 66-67 to include the features of: a first loading chamber and a second loading chamber disposed between the mini-environment chamber and the working chamber, and adapted to be independently controllable so as to have a vacuum atmosphere (support for this amendment is located at pages 73-74, original claim 3 and Figs. 1, 2 and 4 of the application); the second loading chamber is held in a high vacuum atmosphere (support for this amendment is located at page 76, lines 2-4 of the application) and a carrier unit disposed within the second loading chamber for transferring the object to be inspected between the second loading chamber and the stage device (support for this amendment is located at page 79, lines 20-21) (hereinafter "amendments to the parent claims").

Applicants respectfully submit that these amendments to the parent claims are not taught or suggested by the cited prior art.

According to the amendments to the parent claims, a first loading chamber 41 is switched between a vacuum condition and an atmospheric pressure by controlling. This first chamber 41 and the second loading chamber 42 are disposed between the mini-environment chamber 20. The mini-environment chamber is always placed under atmospheric pressure for storing the object to be inspected in a clean air condition. The working chamber 30 is always placed under high vacuum condition. The stage device in the working chamber is also held in high vacuum condition. The second loading chamber includes a carrier unit for transferring the object to be inspected between the second loading chamber and the stage device in the working chamber.

The working chamber should normally be placed under high vacuum condition so as to prevent any contamination. These conditions should be maintained even when the object to be inspected is transferred into or out of the working chamber.

Regarding this point, in the invention pursuant to the amendments to the parent claims, the second loading chamber, which includes the carrier unit for transferring the object into or out of the working chamber, is held in a high vacuum condition. Hence, transfer of the object to be inspected into or out of the working chamber is conducted under stable high vacuum condition and without involving any pressure variation. Therefore, stirring up of dust or particles can be positively prevented.

Applicants respectfully submit that one of skill in the art cannot combine the above amendments to the parent claims with the teachings of Meisberger. Meisberger specifically discloses chambers 224, 226 which are load lock chambers. They are placed under atmospheric

pressure when a wafer is transferred from a load elevator 210, and are placed under high vacuum condition when the wafer is placed on the stage 24. Accordingly, the chambers 224, 226 are subject to large pressure variation. Hence, when this pressure variation in the chamber occurs in Meisberger, dust or particles within the chamber are stirred up by the pressure variation. This is a particularly serious problem when the chamber includes many mechanical parts.

The present invention in light of the amendments to the parent claims prevents such stirring up of dust or particles. The carrier unit, (i.e. mechanical parts,) for transferring the object to be inspected into the working chamber is placed within a transferring chamber, (i.e. the second loading chamber) which is held in a high vacuum condition. Thereby any pressure variation which might result in stirring up particles and causing contamination is prevented.

Specifically, the first loading chamber 41 of the present invention corresponds to the load lock chamber 224, 226 of Meisberger. However, since the first loading chamber of Meisberger is subject to pressure variation, it cannot avoid stirring up dust or particles. However, in this invention, the object to be inspected is not directly transferred from the first loading chamber to the working chamber, but the object to be inspected is also transferred into the second loading chamber, which is held under high vacuum condition, and is then transferred to the working chamber.

Meisberger and the other cited references fail to teach or suggest these technical features and technical advantages of the amendments to the parent claims. Thus, applicants respectfully submit that the present invention, as set forth in claims 61, 64 and 66-67 and their dependent claims, is not obvious in light of the cited references.

Applicants further respectfully submit that one of skill in the art would find the combination of the device of Meisberger and the mini-environment chamber of Tablizi or Shimoyashiro to derive applicants' claimed invention implausible. The Office Action maintains that it would be obvious to the skilled artisan to combine a mini-environment chamber of Tablizi or Shimoyashiro with a device of Meisberger. However, applicants respectfully note that the load elevator 210 of Meisberger (Fig 8) is constituted as an integral unit with the load lock chambers 224, 226 for transferring the wafer into the inspection chamber 206. Therefore it is impossible or meaningless to combine the mini-environment chamber with such an integral unit, since it cannot accomplish the function of the mini-environment chamber even if it is assembled therein.

The Office Action also maintains that a mini-environment chamber of Tablizi or Shimoyashiro maybe provided under the load lock chambers 224, 226 and the load elevator 210 of Meisberger. In such a case, however, since the elevator 210 is a sealed type, it cannot be used for transferring a wafer from the mini-environment chamber to the load lock chamber 224, 226. The other transfer mechanism is needed to transfer the wafer from the mini-environment chamber to the load lock chamber 224, 226. Accordingly, the skilled artisan would find the combination unduly complicated and, impossible to use the mini-environment chamber.

In short, since a sealed type load elevator 210 is used in Meisberger, for transferring a wafer, it is irrational or impossible to combine a mini-environment chamber of Tablizi or Shimoyashiro with the device of Meisberger to derive the current claims as amended.

Amendment Under 37 C.F.R. §1.111

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In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP



Michael J. Caridi

Attorney for Applicants

Registration No. 56,171

Telephone: (202) 822-1100

MJC